Access DB# 49731

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Cephia Toomer Examiner # : 71652 Date: 8/28/01
Art Unit: 1714 Phone Number 30 8-2509 Serial Number: 09/6/9993
Mail Box and Bldg/Room Location: CP3 4D11 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Method and Composition for protecting Civil Infrastructure
Inventors (please provide full names): Carbonell et al

Earliest Priority Filing Date: 10/10/97

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

A composition useful for protecting civil infrastructure said composition consisting essentially of between 80 and 99.9% CO_2 and between about 0.1 and 20% of a fluoropolyether, said fluoropolyether having at least one anchoring group covalently joined thereto.

Said anchoring group is selected from amides, esters, carboxylic acids, urethanes, ureas and mercaptans.

Especially those underlined.

Thanks

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Searcher: EG
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 8-24-01
Searcher Prep & Review Time: 5
Clerical Prep Time:
Online Time: 60

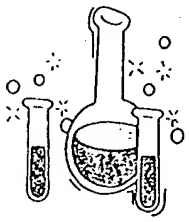
Type of Search

NA Sequence (#)
AA Sequence (#)
Structure (#) 1
Bibliographic 2 (and)
Litigation
Fulltext
Patent Family
Other

Vendors and cost where applicable

STN $131.13
Dialog
Questel/Orbit
DrLink
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify)

PTO-1590 (1-2000)



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The search results generated for your recent request are attached. If you have any questions or comments (compliments or complaints) about the scope or the results of the search, please contact the searcher whose name is circled below.

Kathleen Fuller Eric Linnell ✓ Tim Saunders

All the searchers are located in the library in CP3/4 3D62

(author search)

=> d l4 1-3 all

L4 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:347680 HCAPLUS
DN 131:116844
TI Supercritical CO2 as a solvent for polymeric stone protective materials
AU **Henon, F. E.**; Camaiti, M.; Burke, A. L. C.; **Carbonell, R. G.**; **DeSimone, J. M.**; Piacenti, F.
CS Department of Chemical Engineering and Kenan Center for the Utilization of CO2 in Manufacturing, North Carolina State University, Raleigh, NC, 27695-7905, USA
SO J. Supercrit. Fluids (1999), 15(2), 173-179
CODEN: JSFLEH; ISSN: 0896-8446
PB Elsevier Science B.V.
DT Journal
LA English
CC 36-7 (Physical Properties of Synthetic High Polymers)
AB The utilization of CO2 as a potential solvent for fluoropolymers used for the protection of civil infrastructures (buildings, bridges, monuments, etc.) is of major environmental as well as economic importance. The cloud points of six perfluoropolyethers at different wt. concns. in CO2 have been measured over a wide range of pressures. The results show that these fluorinated polymers are readily sol. in pure CO2 (no cosolvent or surfactant needed) at temps. close to 30.degree.C and pressures below 210 bars. The solubilities of the different polymeric products are strongly depend on the polymer hydrogen content and mol. wt.
ST perfluoropolyether protective coating supercrit solvent; carbon dioxide supercrit solvent fluoropolymer; stone protective coating supercrit solvent
IT Polyethers, uses
(perfluoro; supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
IT Fluoropolymers, uses
(polyether-; supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
IT Stone (construction material)
(supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
IT Solvents
(supercrit.; supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
IT Coating materials
(weather-resistant; supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
IT 124-38-9, Carbon dioxide, uses
(supercrit. carbon dioxide as solvent for perfluoropolyethers used as stone protection materials)
RE.CNT 42

RE.

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L4 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:262197 HCAPLUS

DN. 130:298067
TI Coating compositions and their application for protecting civil engineering infrastructure from pollution effects
IN **Carbonell, Ruben G.**; **Desimone, Joseph M.**; **Henon, Florence E.**
PA North Carolina State University, USA; The University of North Carolina At Chapel Hill
SO PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM B05D001-02
ICS B05D003-02
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 58

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9919080	A1	19990422	WO 1998-US21175	19981008
	W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6127000	A	20001003	US 1997-948733	19971010
	AU 9910710	A1	19990503	AU 1999-10710	19981008
	EP 1051264	A1	20001115	EP 1998-953303	19981008
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 11256093	A2	19990921	JP 1998-288957	19981012
PRAI	US 1997-948733	A	19971010		
	WO 1998-US21175	W	19981008		

AB The title sprayable coating compn. comprises CO2 carrier and a fluorocarbon such as a fluoropolyether (preferably a perfluoropolyether) or a fluorocarbon elastomer, optionally having .gtoreq.1 anchoring group such as an amide.

ST fluoropolyether carbon dioxide coating building material; fluoro rubber carbon dioxide coating building material

IT Bricks
Cement (construction material)
Ceramics
Concrete
(coating compns. for protecting civil engineering infrastructure from pollution effects)

IT Stone (construction material)
(coating compns. for protecting civil engineering infrastructure from pollution effects)

IT Fluoro rubber
(coating compns. for protecting civil engineering infrastructure from pollution effects)

IT Coatings
(fluoropolymer in carbon dioxide; coating compns. for protecting civil engineering infrastructure from pollution effects)

IT Spray coating

(of fluoropolymer in supercrit. carbon dioxide ... material)

IT Polyethers, uses
(perfluoro; coating compns. for protecting civil engineering infrastructure from pollution effects)

IT Fluoropolymers, uses
(polyether-; coating compns. for protecting civil engineering infrastructure from pollution effects)

IT 124-38-9, Carbon dioxide, uses
((supercrit.) solvent, fluoropolymer soly. in; coating compns. for protecting civil engineering infrastructure from pollution effects)

RE.CNT 2

RE

(1) Desimone; US 5496901 A 1996 HCAPLUS

(2) Piacenti; US 4745009 A 1988 HCAPLUS

L4 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:146243 HCAPLUS

TI Coatings from liquid and supercritical carbon dioxide

AU **Carbonell, Ruben G.**; **Henon, Florence E.**; Hoggan, Erik N.; Novick, Brian J.; **DeSimone, Joseph M.**; Kendall, Jonathan L.; Bunyard, William C.

CS Department of Chemical Engineering, North Carolina State University, Raleigh, NC, 27695-7905, USA

SO Book of Abstracts, 217th ACS National Meeting, Anaheim, Calif., March 21-25 (1999), POLY-207 Publisher: American Chemical Society, Washington, D. C.
CODEN: 67GHA6

DT Conference; Meeting Abstract

LA English

AB The discovery of surfactants and polymers that are sol. in carbon dioxide has greatly enhanced the possibilities for developing new coating processes using both liq. and supercrit. carbon dioxide as the carrier solvent. This paper summarizes recent results on coatings of fluoropolymers from supercrit. carbon dioxide, with particular application to the protection of stone materials and marine anti-fouling agents. Preliminary results are also presented on the development of new photoresists that are coated from liq. carbon dioxide by a spin-coating process. Finally, the potential for dip coating applications of sol. and dispersed polymers from liq. carbon dioxide will be discussed.

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     FILE 'HCAPLUS' ENTERED AT 18:15:12 ON 28 AUG 2001
L1           750 SEA CARBONELL ?/AU
L2           721 SEA DESIMONE ?/AU
L3           139 SEA HENON ?/AU
L4             3 SEA L1 AND L2 AND L3
L5          4447 SEA (FLUOROPOLYM? OR PERFLUOROPOLYM? OR FLUORINAT? OR
                 PERFLUORINAT? OR FLUORO? OR PERFLUORO?)(2A)POLYETHER? OR
                 FLUOROPOLYETHER# OR PERFLUOROPOLYETHER#

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                 E CARBON DIOXIDE/CN
L6             1 SEA "CARBON DIOXIDE"/CN

     FILE 'HCAPLUS' ENTERED AT 18:26:27 ON 28 AUG 2001
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L8         70175 SEA SCF OR S(W)C(W)F OR SUPERCRIT? OR SUPER?(2A)CRIT?
L9        486129 SEA (BUILDING# OR CONSTRUCTION?)(2A)MATERIAL# OR BRICK?
                 OR CEMENT? OR CONCRETE? OR CERAMIC? OR STONE# OR
                 CINDERBLOCK? OR CINDER?(2A)BLOCK? OR MASONR? OR PORTLAND?
                  OR GROUT? OR TERRAZZO?
                 E COATING MATERIALS/CV
L10       187386 SEA "COATING MATERIALS"/CV
                 E COATING PROCESS/CV
L11        86052 SEA "COATING PROCESS"/CV
                 E COATING MATERIALS/CV
L12        53424 SEA (ANCHOR? OR END? OR TERMINA?)(2A)GROUP? OR ENDCAP?
                 OR ENDGROUP? OR ENDBLOCK? OR END?(2A)(CAP OR CAPS OR
                 CAPPED OR CAPPING# OR BLOCK? OR GROUP?)
L13          199 SEA L5 AND L7
L14           48 SEA L13 AND L8
L15            6 SEA L14 AND (L10 OR L11 OR L12)
L16            3 SEA L14 AND L9
L17            7 SEA L13 AND L9
                 E COATING MATERIALS/CV
L18       187386 SEA "COATING MATERIALS"/CV
L19            2 SEA L14 AND (L10 OR L11 OR L18)
L20            4 SEA L14 AND L12
L21          375 SEA L5 AND L12
L22            9 SEA L21 AND L7
L23            0 SEA L22 AND (L10 OR L11 OR L18)
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L24             4 SEA L22 AND L8

     FILE 'REGISTRY' ENTERED AT 18:38:12 ON 28 AUG 2001
                E FLUOROPOLYMER/PCT
L25          8281 SEA FLUOROPOLYMER/PCT
                E POLYETHER/PCT
L26        207716 SEA POLYETHER/PCT
L27           728 SEA L26 AND L25
L28         15185 SEA L26 AND F/ELS

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L29           383 SEA L27
L30          8517 SEA L28
L31           290 SEA (L29 OR L30) AND L7
L32            14 SEA L31 AND L12
L33             0 SEA L32 AND (L10 OR L11 OR L18)
L34             0 SEA L32 AND L9
L35             6 SEA L32 AND L8
L36           431 SEA ANCHOR?(3A)(AMIDE# OR AMIDO# OR ESTER# OR CARBOXY?
                  OR COOH OR CO2H OR URETHAN## OR UREA# OR THIOL# OR
                  MERCAPT?)
L37             0 SEA L31 AND L36
L38             0 SEA L13 AND L36
L39          5542 SEA L12(3A)(AMIDE# OR AMIDO# OR ESTER# OR CARBOXY? OR
                  COOH OR CO2H OR URETHAN## OR UREA# OR THIOL# OR MERCAPT?)
L40             5 SEA L31 AND L39
L41             3 SEA L13 AND L39
L42            17 SEA L16 OR L17 OR L19 OR L20 OR L24 OR L35 OR L40 OR L41
L43             4 SEA L22 NOT L42
L44             5 SEA L32 NOT (L42 OR L43)

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=> d l42 1-17 ibib abs hitstr hitind


L42  ANSWER 1 OF 17  HCAPLUS  COPYRIGHT 2001 ACS
ACCESSION NUMBER:         2000:772728  HCAPLUS
DOCUMENT NUMBER:          133:336899
TITLE:                    Stabilized carbon dioxide
                          fluid composition and use in cleaning and
                          extraction applications
INVENTOR(S):              Senger, Elsbernd Cheryl L.
PATENT ASSIGNEE(S):       3M Innovative Properties Company, USA
SOURCE:                   PCT Int. Appl., 31 pp.
```

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000065018	A1	20001102	WO 1999-US12509	19990604
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6235701	B1	20010522	US 1999-299402	19990426
AU 9945466	A1	20001110	AU 1999-45466	19990604

PRIORITY APPLN. INFO.:
US 1999-299402 A 19990426
CA 1998-2255413 A 19981211
WO 1999-US12509 W 19990604

OTHER SOURCE(S): MARPAT 133:336899

AB A stable fluid comprises compressed fluid **CO2**, an inert gas, and a fluorochem. stabilizer. The fluid compn. is useful in cleaning of metals, glass, **ceramics**, natural and synthetic polymers, and fabrics and in the extn. of desirable substances, such as the extn. of essential oils from plants. An example dry cleaning fluid contained 0.17 g C4F9OCH2CH3 stabilizer, 5 mL **CO2**, and N (g).

IT **124-38-9**, **Carbon dioxide**, uses
(compressed or **supercrit**.; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

O=C=O

IC ICM C11D007-28
ICS C11D007-30; C11D007-50; C11D011-00
CC 46-5 (Surface Active Agents and Detergents)
ST **carbon dioxide** compressed fluid cleaning agent; extn agent **carbon dioxide** stabilized fluid; dry cleaning agent **carbon dioxide** stabilized fluid

IT Ethers, uses
(fluoroalkyl, stabilizer; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)

IT **Polyethers**, uses
(**perfluoro**, stabilizer; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)
IT **Fluoropolymers**, uses
(**polyether**-, stabilizer; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)
IT Dry cleaning solvents
Wool
(stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer for cleaning)
IT Extractants
(stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer for coffee)
IT Coffee (Coffea)
(stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer for coffee extn.)
IT Perfluorocarbons
(stabilizer; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)
IT **124-38-9**, **Carbon dioxide**, uses
(compressed or **supercrit**.; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)
IT 7727-37-9, Nitrogen, uses
(stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)
IT 311-89-7, FC-43 375-03-1 163702-05-4 163702-07-6
(stabilizer; stabilized **carbon dioxide** fluid compn. contg. inert gas and fluorochem. stabilizer)

REFERENCE COUNT: 8
REFERENCE(S):
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(3) Create Kk; JP 08041494 A 1996 HCAPLUS
(4) E I Du Pont de Nemours And Company; WO 9728229 A 1997 HCAPLUS
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(6) Haky Hakuyosha Kk; JP 10018176 A 1998 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 2000:375551 HCAPLUS
DOCUMENT NUMBER: 133:120745
TITLE: Synthesis of Block Copolymers Containing a Main Chain Polymeric NLO Segment
AUTHOR(S): Pan, Jing; Chen, Mingfei; Warner, William; He, Mingqian; Dalton, Larry; Hogen-Esch, Thieo E.
CORPORATE SOURCE: Loker Hydrocarbon Research Institute and Department of Chemistry and University of Southern California, Los Angeles, CA, 90089-1661, USA

SOURCE: Macromolecules (2000), 33(13), 4673-4681
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A poly-4-vinylpyridine-b-PNLO (nonlinear optical material)-b-polystyrene-b-poly(4-vinylphenol) tetrablock copolymer (P4VP-b-PNLO-b-PS-b-PVPh) was prepd., which contains an NLO polymeric segment prepd. by step polymn. The tetrablock copolymer is designed to form an asym. lamellar structure by self-assembly prompted by the interactions between the donor and acceptor blocks which are expected to help to align the dipole moments of PNLO block into one direction. The synthesis was carried out by reaction of a P4VP-b-PNLO-Ph-NH2 block copolymer contg. an aniline end group with a poly(4-tert-butyl-dimethylsiloxy)styrene-b-PS-CO2H (PBDMSS-b-PS-COOH) diblock copolymer contg. a tert-butyl-dimethylsilyl-protected polyvinylphenol endowed with a **carboxylic end group** in the presence of diphenylphosphoryl azide (DPPA) in N,N-dimethylacetamide. After formation of the P4VP-b-PNLO-PhNH-CO-PS-b-PBDMSS tetrablock copolymer, the PVPh block was obtained by deprotection of tert-butyl-dimethylsilyl group of the PBDMSS block with tetrabutylammonium fluoride in THF. The PBDMSS-b-PS-COOH precursor was synthesized by initiation of 4-(tert-butyl-dimethylsilyl)oxystyrene by tert-butyllithium in THF at -78.degree. followed by addn. of styrene and end functionalized with dried **carbon dioxide** gas. The end-functionalized P4VP-b-PNLO-Ph-NH2 block copolymer was synthesized by step polymn. of 4-(4-(4-fluorophenylsulfonyl)phenyl)sulfonyl-4'-N-ethyl-N-2-(4-hydroxyphenolic)ethyl-azobenzene and coupling to P4VP-Ph-OH that was end-functionalized with a phenolic end group followed by end capping with 4-(4-(4-fluorophenylsulfonyl)phenyl)sulfonyl-4'-N-ethyl-N-2-(4-aminophenolic)ethylazobenzene. The end-functionalized P4VP-Ph-OH was synthesized by the 1,1-diphenyl-3,3-dimethylbutyllithium-initiated polymn. of 4-vinylpyridine in THF at -78.degree. followed by addn. of 4-(tert-butyldimethylsiloxy)bromomethylbenzene.

IT **285555-45-5DP**, desilylated
(step polymn. rout to tetrablock copolymers contg. main chain fluorophenylsulfonyl ethylazobenzene NLO segment and styrene-vinylpyridine-dimethylsiloxystyrene blocks)

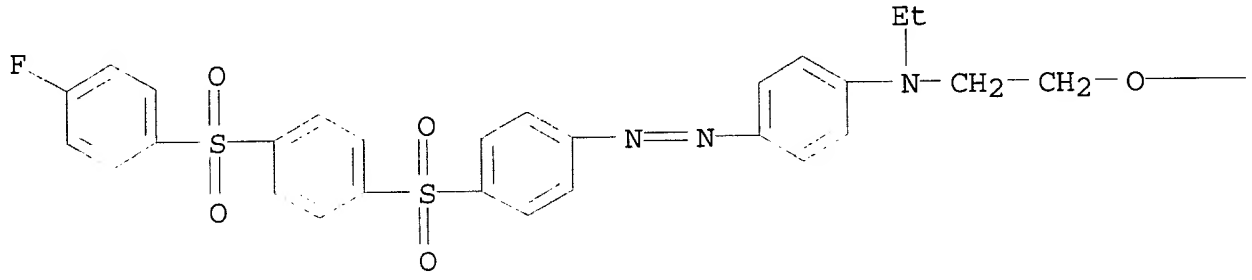
RN 285555-45-5 HCAPLUS

CN Phenol, 4-[2-[ethyl[4-[[4-[[4-[(4-fluorophenyl)sulfonyl]phenyl]sulfonyl]phenyl]azo]phenyl]amino]ethoxy]-, polymer with (1,1-dimethylethyl)(4-ethenylphenoxy)dimethylsilane, ethenylbenzene and 4-ethenylpyridine, block (9CI) (CA INDEX NAME)

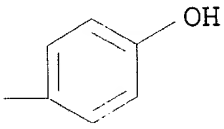
CM 1

CRN 224633-60-7
CMF C34 H30 F N3 O6 S2

PAGE 1-A

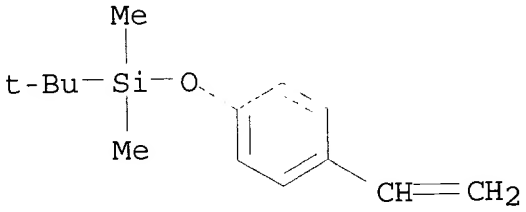


PAGE 1-B



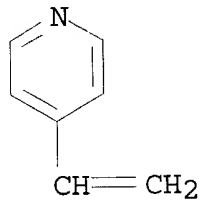
CM 2

CRN 84494-81-5
CMF C14 H22 O Si



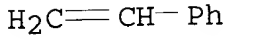
CM 3

CRN 100-43-6
CMF C7 H7 N



CM 4

CRN 100-42-5
CMF C8 H8



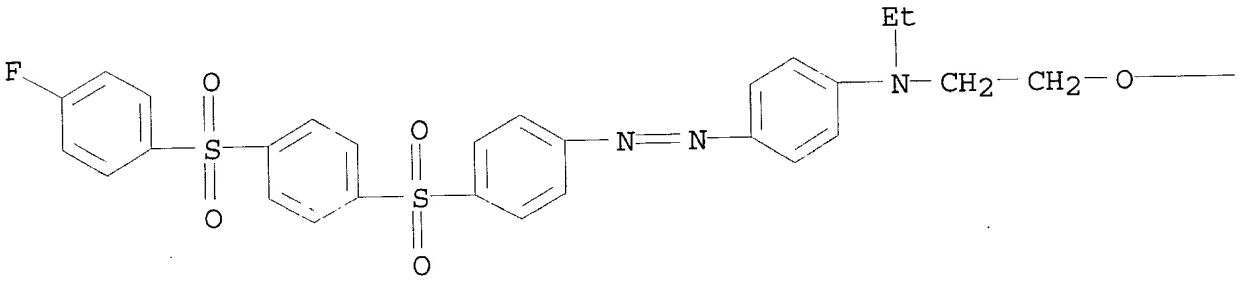
IT **285555-45-5P**
(tetrablock; step polymn. rout to tetrablock copolymers contg. main chain fluorophenylsulfonyl ethylazobenzene NLO segment and styrene-vinylpyridine-dimethylsiloxystyrene blocks)

RN 285555-45-5 HCAPLUS
CN Phenol, 4-[2-[ethyl[4-[[4-[[4-[(4-fluorophenyl)sulfonyl]phenyl]sulfonyl]phenyl]azo]phenyl]amino]ethoxy]-, polymer with (1,1-dimethylethyl)(4-ethenylphenoxy)dimethylsilane, ethenylbenzene and 4-ethenylpyridine, block (9CI) (CA INDEX NAME)

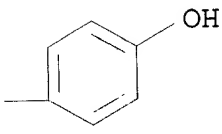
CM 1

CRN 224633-60-7
CMF C34 H30 F N3 O6 S2

PAGE 1-A



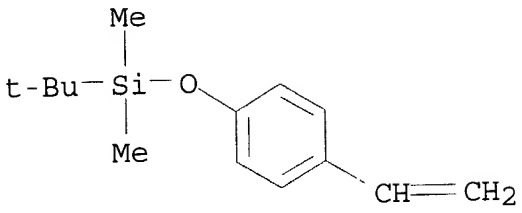
PAGE 1-B



CM 2

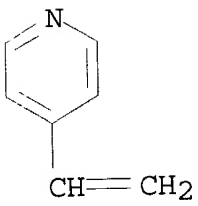
CRN 84494-81-5

CMF C14 H22 O Si



CM 3

CRN 100-43-6
CMF C7 H7 N



CM 4

CRN 100-42-5
CMF C8 H8

$H_2C{=}CH{-}Ph$

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36, 73

IT **285555-45-5DP**, desilylated
(step polymn. rout to tetrablock copolymers contg. main chain fluorophenylsulfonyl ethylazobenzene NLO segment and styrene-vinylpyridine-dimethylsiloxystyrene blocks)

IT **285555-45-5P**
(tetrablock; step polymn. rout to tetrablock copolymers contg. main chain fluorophenylsulfonyl ethylazobenzene NLO segment and styrene-vinylpyridine-dimethylsiloxystyrene blocks)

REFERENCE COUNT: 51
REFERENCE(S):
(1) Bates, F; Science 1991, V251, P898 HCAPLUS
(2) Breiner, U; Macromol Chem Phys 1997, V198, P1051 HCAPLUS

(3) Brinkmann, S; Macromolecules 1998, V31, P6566 HCAPLUS
(5) Chen, M; Polym Prepr 1999, V40(1), P158 HCAPLUS
(6) Chen, Z; Science 1997, V277, P1248 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:819421 HCAPLUS
DOCUMENT NUMBER: 132:64669
TITLE: Addition dispersion polymerization in fluid reaction medium using removable stabilizers
INVENTOR(S): Irvine, Derek John; Christian, Paul; Howdle, Steven Melvyn
PATENT ASSIGNEE(S): Imperial Chemical Industries Plc, UK
SOURCE: PCT Int. Appl., 13 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9967297	A1	19991229	WO 1999-GB1830	19990609
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9942804	A1	20000110	AU 1999-42804	19990609
BR 9911485	A	20010320	BR 1999-11485	19990609
EP 1095065	A1	20010502	EP 1999-957170	19990609
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: GB 1998-13573 A 19980624
WO 1999-GB1830 W 19990609

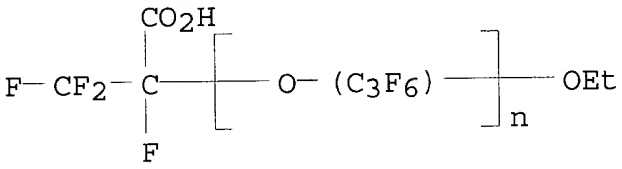
AB A title method comprises polymg. a homogeneous reaction mixt. including (a) at least one addn. polymerizable monomer, (b) a fluid reaction medium, preferably, **supercrit. carbon dioxide**, (c) a stabilizer, which is a material having a chain sol. in the **supercrit.** fluid and a functional **end-group** which is not polymerizable by a free-radical mechanism, and, optionally, (d) a chain transfer agent such as Bu mercaptan. At least one addn. polymerizable monomer is an ester of acrylic or methacrylic acids or substituted analogs thereof. A stabilizer comprises a functionalized fluoropolymer, siloxane, polyphosphazene or polyethylene oxide, preferably, an

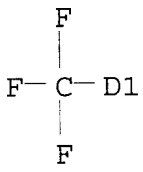
acid-terminated **perfluoropolyether**, allows good control of the morfol. of the particles produced, and can be removed by venting along with the fluid medium. Thus, 10 g Me methacrylate, 1 wt.% Fomblin DA 601 (phosphate-terminated **perfluoropolyether**) and 1 wt.% azobis(isobutyronitrile) was polymd. in an autoclave for 4 h at 70.degree. and 200 bar **CO2**, giving a fine white polymer powder having av. particle size .apprx.2.7 .mu.m, polydispersity .apprx.2.7, and Mn 50 kD.

IT **51798-33-5**, Krytox 157FSH **90317-74-1**, Krytox 157FSL **106441-58-1**, Krytox 157FSM
(stabilizer; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)

RN 51798-33-5 HCAPLUS

CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(1-carboxy-1,2,2,2-tetrafluoroethyl)-.omega.-[tetrafluoro(trifluoromethyl)ethoxy]- (9CI) (CA INDEX NAME)

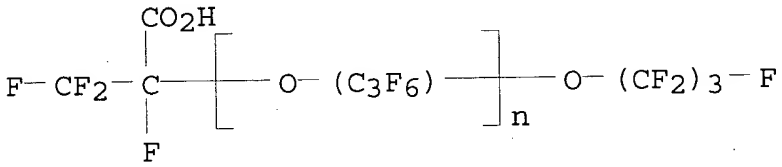




4 (D1—F)

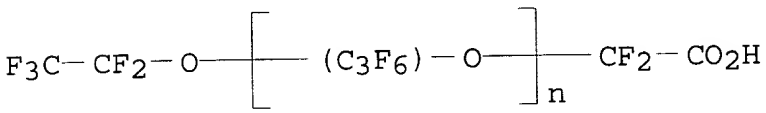
RN 90317-74-1 HCAPLUS

CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(1-carboxy-1,2,2,2-tetrafluoroethyl)-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)

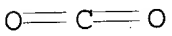


RN 106441-58-1 HCAPLUS

CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(carboxydifluoromethyl)-.omega.-(pentafluoroethoxy)- (9CI) (CA INDEX NAME)



IT **124-38-9**, **Carbon dioxide**, uses
(**supercrit**.; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



IC ICM C08F002-04
CC 35-4 (Chemistry of Synthetic High Polymers)
ST dispersion polymn acrylic monomer **supercrit** fluid; **carbon dioxide supercrit** fluid addn polymn; acid terminated **perfluoropolyether** stabilizer addn polymn; butyl mercaptan chain transfer addn polymn
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
Polyphosphazenes
Polysiloxanes, uses
(functional **group-terminated**; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
IT **Polyethers**, uses
(**perfluoro**, carboxylic acid-terminated; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
IT **Fluoropolymers**, uses
(**polyether-**, carboxylic acid-terminated; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
IT **Fluoropolymers**, uses
(**polyether-**, functionalized stabilizers; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
IT **Supercritical** fluids
(reaction medium; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)
IT 25322-68-3D, Polyethylene oxide, functional **group-terminated**
(addn. dispersion polymn. in fluid reaction medium using removable stabilizers)

IT **51798-33-5**, Krytox 157FSH **90317-74-1**, Krytox 157FSL **106441-58-1**, Krytox 157FSM 176521-26-9, Fluorolink E 196623-59-3, Fluorolink C 253179-50-9, Galden MF 300 253179-53-2, Fomblin DA 601
(stabilizer; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)

IT **124-38-9**, **Carbon dioxide**, uses
(**supercrit.**; addn. dispersion polymn. in fluid reaction medium using removable stabilizers)

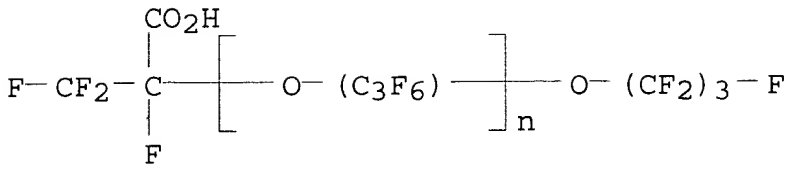
REFERENCE COUNT: 2
REFERENCE(S): (1) Air Prod & Chem; EP 0814112 A 1997 HCAPLUS
(2) Menceloglu Yusuf, Z; WO 9504085 A 1995 HCAPLUS

L42 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:816229 HCAPLUS
DOCUMENT NUMBER: 132:108382
TITLE: Dispersion polymerization of methyl methacrylate in **supercritical carbon dioxide** with a monofunctional pseudo-graft stabilizer
AUTHOR(S): Christian, Paul; Howdle, Steven M.; Irvine, Derek J.
CORPORATE SOURCE: School of Chemistry, University of Nottingham, Nottingham, NG7 2RD, UK
SOURCE: Macromolecules (2000), 33(2), 237-239
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The polymn. of Me methacrylate (MMA) in **supercrit.** **CO2** (scCO2) was performed in the presence of Krytox 157FSL, a com. available carboxylic acid-terminated **perfluoropolyether**, as stabilizer. Fourier-transform IR (FTIR) spectroscopy was used to demonstrate an interaction between the **terminal** acid **group** of the stabilizer with MMA, and hence with PMMA. The samples were presented as thin liq. films of MMA, stabilizer, and various mixts. on CaF2 disks and mounted in transmission mode of the FTIR spectrometer. Krytox is an effective stabilizer for the free radical polymn. of MMA in scCO2. The interaction with PMMA is most likely via a H-bond between the C=O of the methacrylate moiety and the **terminal** acid **group** of the stabilizer. The terminal acid functionality is required for stabilization of the polymn. reaction.

IT **90317-74-1**, Krytox 157FSL
(stabilizer; dispersion polymn. of Me methacrylate in **supercrit.** **CO2** with monofunctional pseudo-graft fluoropolymer stabilizer)

RN 90317-74-1 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(1-carboxy-1,2,2,2-tetrafluoroethyl)-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)
ST polymn methyl methacrylate **perfluoropolyether** stabilizer **supercrit carbon dioxide**; IR spectroscopy interaction stabilizer PMMA; polyoxyalkylene fluoro graft polymer intermediate PMMA prepn
IT Polyoxyalkylenes, uses
(fluorine-contg., stabilizer; dispersion polymn. of Me methacrylate in **supercrit**. **CO2** with monofunctional pseudo-graft fluoropolymer stabilizer)
IT Fluoropolymers, uses
(polyoxyalkylene-, stabilizer; dispersion polymn. of Me methacrylate in **supercrit**. **CO2** with monofunctional pseudo-graft fluoropolymer stabilizer)
IT 9011-14-7P, PMMA
(dispersion polymn. of Me methacrylate in **supercrit**. **CO2** with monofunctional pseudo-graft fluoropolymer stabilizer)
IT **90317-74-1**, Krytox 157FSL
(stabilizer; dispersion polymn. of Me methacrylate in **supercrit**. **CO2** with monofunctional pseudo-graft fluoropolymer stabilizer)
REFERENCE COUNT: 17
REFERENCE(S):
(2) Buback, M; J Supercrit Fluids 1995, V8, P119 HCAPLUS
(3) Canelas, D; Macromolecules 1997, V30, P5673 HCAPLUS
(5) Darr, J; Chem Rev 1999, V99, P495 HCAPLUS
(6) DeSimone, J; Science 1994, V265, P356 HCAPLUS
(7) Desimone, J; Science 1992, V257, P945 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

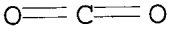
L42 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:347680 HCAPLUS
DOCUMENT NUMBER: 131:116844
TITLE: **Supercritical CO2** as a solvent for polymeric **stone** protective materials
AUTHOR(S): Henon, F. E.; Camaiti, M.; Burke, A. L. C.; Carbonell, R. G.; DeSimone, J. M.; Piacenti, F.
CORPORATE SOURCE: Department of Chemical Engineering and Kenan Center for the Utilization of CO2 in

Manufacturing, North Carolina State University, Raleigh, NC, 27695-7905, USA
SOURCE: J. Supercrit. Fluids (1999), 15(2), 173-179
CODEN: JSFLEH; ISSN: 0896-8446
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The utilization of **CO2** as a potential solvent for fluoropolymers used for the protection of civil infrastructures (buildings, bridges, monuments, etc.) is of major environmental as well as economic importance. The cloud points of six **perfluoropolyethers** at different wt. concns. in **CO2** have been measured over a wide range of pressures. The results show that these fluorinated polymers are readily sol. in pure **CO2** (no cosolvent or surfactant needed) at temps. close to 30.degree.C and pressures below 210 bars. The solubilities of the different polymeric products are strongly depend on the polymer hydrogen content and mol. wt.

IT **124-38-9**, **Carbon dioxide**, uses
(**supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



CC 36-7 (Physical Properties of Synthetic High Polymers)
ST **perfluoropolyether** protective coating **supercrit** solvent; **carbon dioxide supercrit** solvent fluoropolymer; **stone** protective coating **supercrit** solvent

IT **Polyethers**, uses
(**perfluoro**; **supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

IT **Fluoropolymers**, uses
(**polyether**-; **supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

IT **Stone** (**construction material**)
(**supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

IT Solvents
(**supercrit.**; **supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

IT **Coating materials**
(weather-resistant; **supercrit. carbon**

dioxide as solvent for **perfluoropolyethers** used as **stone** protection materials)

IT **124-38-9**, **Carbon dioxide**, uses
(**supercrit. carbon dioxide** as solvent for **perfluoropolyethers** used as **stone** protection materials)

REFERENCE COUNT: 42
REFERENCE(S):
(1) Brady, J; Journal of Physical Chemistry 1985, V89, P1813 HCAPLUS
(3) Cece, A; Journal of Physical Chemistry 1996, V100, P7435 HCAPLUS
(4) DeSimone, J; Science 1992, V257, P945 HCAPLUS
(5) Diep, P; Journal of Physical Chemistry 1998, V102, P2231 HCAPLUS
(6) Enick, R; Journal of Supercritical Fluids 1998, V13, P127 HCAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:262197 HCAPLUS
DOCUMENT NUMBER: 130:298067
TITLE: Coating compositions and their application for protecting civil engineering infrastructure from pollution effects
INVENTOR(S): Carbonell, Ruben G.; Desimone, Joseph M.; Henon, Florence E.
PATENT ASSIGNEE(S): North Carolina State University, USA; The University of North Carolina At Chapel Hill
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9919080	A1	19990422	WO 1998-US21175	19981008
W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6127000	A	20001003	US 1997-948733	19971010
AU 9910710	A1	19990503	AU 1999-10710	19981008
EP 1051264	A1	20001115	EP 1998-953303	19981008
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,				

PT, IE, FI
JP 11256093 A2 19990921 JP 1998-288957 19981012
PRIORITY APPLN. INFO.: US 1997-948733 A 19971010
WO 1998-US21175 W 19981008

AB The title sprayable coating compn. comprises CO_2 carrier and a fluorocarbon such as a **fluoropolyether** (preferably a **perfluoropolyether**) or a fluorocarbon elastomer, optionally having .gtoreq.1 **anchoring group** such as an **amide**.

IT **124-38-9**, **Carbon dioxide**, uses
((**supercrit**.) solvent, fluoropolymer soly. in; coating compns. for protecting civil engineering infrastructure from pollution effects)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

O=C=O

IC ICM B05D001-02
ICS B05D003-02
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 58
ST **fluoropolyether carbon dioxide** coating **building material**; fluoro rubber **carbon dioxide** coating **building material**
IT **Bricks**
Cement (**construction material**)
Ceramics
Concrete
(coating compns. for protecting civil engineering infrastructure from pollution effects)
IT **Stone** (**construction material**)
(coating compns. for protecting civil engineering infrastructure from pollution effects)
IT Coatings
(fluoropolymer in **carbon dioxide**; coating compns. for protecting civil engineering infrastructure from pollution effects)
IT Spray coating
(of fluoropolymer in **supercrit**. **carbon dioxide** onto **building material**)
IT **Polyethers**, uses
(**perfluoro**; coating compns. for protecting civil engineering infrastructure from pollution effects)
IT **Fluoropolymers**, uses
(**polyether**-; coating compns. for protecting civil engineering infrastructure from pollution effects)
IT **124-38-9**, **Carbon dioxide**, uses
((**supercrit**.) solvent, fluoropolymer soly. in; coating compns. for protecting civil engineering infrastructure from

pollution effects)
REFERENCE COUNT: 2
REFERENCE(S): (1) Desimone; US 5496901 A 1996 HCAPLUS
(2) Piacenti; US 4745009 A 1988 HCAPLUS

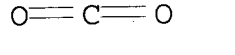
L42 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:253836 HCAPLUS
DOCUMENT NUMBER: 128:258003
TITLE: Gas and water vapor transport through polymer based protective materials for **stone** monuments. Fluorinated polyurethanes
AUTHOR(S): Antonucci, V.; Mastrangeli, C.; Mensitieri, G.; Del Nobile, M. A.; Nicolais, L.
CORPORATE SOURCE: Dep. Mater. Production Eng., Univ. Naples 'Federico II', Naples, 80125, Italy
SOURCE: Mater. Struct. (1998), 31(206), 104-110
CODEN: MASTED; ISSN: 1359-5997
PUBLISHER: RILEM Publications
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Oxygen, **carbon dioxide** and water vapor transport properties were investigated for a new class of polymers, fluorinated polyurethanes, which were recently proposed as a protective material for **stone** monuments. They consist of block copolymers made of hydrophilic polyurethane and hydrophobic perfluoropolymer blocks. Properties of these copolymers are expected to be strongly related to the relative amts. of these two blocks. Three different types of fluorinated polyurethane copolymers were considered in order to assess the effect of chem. compn. and phys. morphol. on mass transport properties. In particular, sorption and permeation expts. were performed at 30.degree.C to evaluate permeabilities, diffusivities and solubilities. The anal. of the effect of chem. compn. on transport properties can give useful selection criteria to tailor the material to be used as a protective.
IT **124-38-9**, **Carbon dioxide**, processes
(gas and water vapor transport through fluorinated polyurethanes)
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

O=C=O

CC 37-5 (Plastics Manufacture and Processing)
ST fluorinated polyurethane gas water vapor transport; block copolymer polyurethane permeation sorption; oxygen transport fluorinated polyurethane; **carbon dioxide** transport fluorinated polyurethane; sorption gas water fluorinated polyurethane; permeation gas water fluorinated polyurethane
IT **Fluoropolymers**, properties
(**polyether**-polyurethane-, block; gas and water vapor

transport through fluorinated polyurethanes)
IT **124-38-9**, **Carbon dioxide**, processes
7782-44-7, Oxygen, processes
(gas and water vapor transport through fluorinated polyurethanes)

L42 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1998:148768 HCAPLUS
DOCUMENT NUMBER: 128:193369
TITLE: Nanotechnological method to control the molecular weight cut-off and/or pore diameter of organic-inorganic composite membrane
AUTHOR(S): Okazaki, I.; Ohya, H.; Semenova, S. I.; Kikuchi, S.; Aihara, M.; Negishi, Y.
CORPORATE SOURCE: Department of Material Science and Chemical Engineering, Yokohama National University, 79-5 Tokiwadai Hodogaya-ku, Yokohama, Japan
SOURCE: J. Membr. Sci. (1998), 141(1), 65-74
CODEN: JMESDO; ISSN: 0376-7388
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Polyimide-alumina composite membranes were fabricated by the nanotechnol. copolymn. method of co-polymer which has a const. repeating unit chem. bound by primer on the wall and/or surface of the porous **ceramic** support. By changing the no. of repeating unit (n) in the polymer, the fabricated pyromellitic dianhydride (PMDA)-diaminodiphenyl ether (ODA) composite membranes have a sepn. factor .alpha.^{CO2}/CH4 in the range 1.0-6.4 and mol. wt. cut-off (MWCO) 400-4000. As for the composite membranes of n = 20, the sepn. factor .alpha.^{CO2}/CH4 of the 4,4'-(hexafluoroisopropylidene)-diphthalic anhydride (6FDA)-diaminodiphenyl ether (ODA) composite membrane was approx. 1.6 times larger than that of the PMDA-ODA composite membranes, and these values were 7.5 and 4.7 at 323 K, resp. With the increase of temp., the sepn. factor decreased, and the value obtained was 4.8 at 423 K. The pure gas permeances through the carbon membrane (PMDA-ODA: n = 20) was approx. 75-260 times larger than the values through the PMDA-ODA (n = 20) composite membranes. However, this membrane did not show any gas sepn. ability.
IT **124-38-9**, **Carbon dioxide**, processes
(sepn. of, from methane; nanotechnol. method to control mol. wt. cut-off and/or pore diam. of org.-inorg. polyimide-alumina composite membranes for)
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 57

IT **Fluoropolymers**, uses
(**polyether**-polyimide-, composite membrane; nanotechnol. method to control mol. wt. cut-off and/or pore diam. of org.-inorg. polyimide-alumina composite membranes)

IT 74-82-8, Methane, processes
(sepn. of, from **carbon dioxide**; nanotechnol. method to control mol. wt. cut-off and/or pore diam. of org.-inorg. polyimide-alumina composite membranes)

IT **124-38-9**, **Carbon dioxide**, processes
(sepn. of, from methane; nanotechnol. method to control mol. wt. cut-off and/or pore diam. of org.-inorg. polyimide-alumina composite membranes for)

L42 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1997:425993 HCAPLUS
DOCUMENT NUMBER: 127:136197
TITLE: Chelating agents for extraction of metals in **supercritical carbon dioxide**
INVENTOR(S): Beckman, Eric J.; Russell, Alan J.
PATENT ASSIGNEE(S): University of Pittsburgh, USA
SOURCE: U.S., 21 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

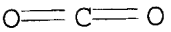
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5641887	A	19970624	US 1994-223105	19940401
US 5872257	A	19990216	US 1997-831999	19970401
US 6183815	B1	20010206	US 1999-250537	19990216

PRIORITY APPLN. INFO.: US 1994-223105 A2 19940401
US 1997-831999 A2 19970401

AB The title agents suitable for forming coordinated complexes with a metal in liq. and **supercritical CO2** contain covalently bonded (i) a bispicolylamino group, (ii) a non-electron withdrawing spacer group selected (CH2)x and (iii) a **CO2**-sol. functional group selected from (CF2CF2O)x(CF2O)x and [CF2CF(CF3)O]x, wherein x (.gtoreq.3) is selected to minimize the electron withdrawing effect of the **CO2**-sol. functional group and to achieve a chelating agent soly. .gtoreq.10-3 g/g-**CO2**. Also disclosed is a method of extg. a metal from a matrix contg. at least one other material and the metal using such **CO2**-sol. chelating agents. Krytox 157FSL was treated with thionyl chloride to convert into acid chloride and treated with picolylamine, dipicolylamine, dimercaptopropanol, etc. to obtain chelating agents suitable for extg. Ni, Pb, etc.

IT **106441-57-0DP**, Krytox 157FSL, chelating group-contg. derivs.
(chelating agents for extn. of metals in **supercrit. carbon dioxide**)

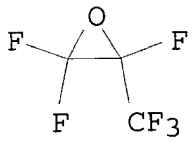
RN 106441-57-0 HCAPLUS
IT **124-38-9**, **Carbon dioxide**, uses
(chelating agents for extn. of metals in **supercrit.** **carbon dioxide**)
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



IT **25038-02-2DP**, Poly(hexafluoropropylene oxide), **carboxy-terminated**, chelating **group**-contg.
(chelating agents for extn. of metals in **supercrit.** **carbon dioxide**)
RN 25038-02-2 HCAPLUS
CN Oxirane, trifluoro(trifluoromethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 428-59-1
CMF C3 F6 O



IC ICM C07D401-06
NCL 546026200
CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 60
IT Chelating agents
Extraction
(chelating agents for extn. of metals in **supercrit.** **carbon dioxide**)
IT Polysiloxanes, preparation
(chelating group-contg.; chelating agents for extn. of metals in **supercrit.** **carbon dioxide**)
IT Polyoxyalkylenes, preparation
(perfluoro, **carboxy-terminated**, chelating **group**-contg.; chelating agents for extn. of metals in **supercrit.** **carbon dioxide**)
IT Fluoropolymers, preparation
(polyoxyalkylene-, **carboxy-terminated**, chelating **group**-contg.; chelating agents for extn. of metals in **supercrit.** **carbon dioxide**

)

IT 59-52-9DP, 2,3-Dithio-1-propanol, reaction products with carboxy-terminated **perfluoropolyethers** 75-15-0DP, Carbon disulfide, reaction products with dimethylethylenediamine and carboxy-terminated **perfluoropolyethers** 93-62-9DP, 2-Hydroxyethyliminodiacetic acid, reaction products with carboxy-terminated **perfluoropolyethers**, hydrolyzed 106-92-3DP, reaction products with Me hydrogen siloxane and picolylamine 110-70-3DP, reaction products with carbon disulfide and carboxy-terminated **perfluoropolyethers** 154-42-7DP, reaction products with carboxy-terminated **perfluoropolyethers** 452-06-2DP, 1H-Purin-2-amine, reaction products with carboxy-terminated **perfluoropolyethers** 1656-94-6DP, reaction products with carboxy-terminated **perfluoropolyethers** 3731-52-0DP, 3-Picolyl amine, reaction products with carboxy-terminated **perfluoropolyethers** 10025-87-3DP, Phosphorus oxychloride, reaction products with carboxy-terminated **perfluoropolyethers**, hydrolyzed **106441-57-0DP**, Krytox 157FSL, chelating group-contg. derivs. 156118-35-3DP, Dimethylsilanediol-methylsilanediol copolymer, reaction products with allyl glycidyl ether and picolylamine
(chelating agents for extn. of metals in **supercrit. carbon dioxide**)

IT **124-38-9**, **Carbon dioxide**, uses
(chelating agents for extn. of metals in **supercrit. carbon dioxide**)

IT 7439-92-1P, Lead, preparation 7440-02-0P, Nickel, preparation **25038-02-2DP**, Poly(hexafluoropropylene oxide), **carboxy-terminated**, chelating **group** -contg.
(chelating agents for extn. of metals in **supercrit. carbon dioxide**)

IT 7719-09-7, Thionyl chloride
(chelating agents for extn. of metals in **supercrit. carbon dioxide**)

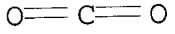
L42 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1997:113146 HCAPLUS
DOCUMENT NUMBER: 126:104490
TITLE: Dispersion Polymerization of Methyl Methacrylate in **Supercritical CO2**
AUTHOR(S): Lepilleur, Carole; Beckman, Eric J.
CORPORATE SOURCE: Chemical Engineering Department, University of Pittsburgh, Pittsburgh, PA, 15261, USA
SOURCE: Macromolecules (1997), 30(4), 745-756
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A series of graft copolymers, poly(Me methacrylate-co-hydroxyethyl methacrylate)-g-poly(perfluoropropylene oxide), was synthesized for application as stabilizers in the dispersion polymn. of Me

methacrylate in **supercrit. carbon dioxide**. The backbone, poly(Me methacrylate-co-hydroxyethyl methacrylate), is effectively insol. in **carbon dioxide** and the grafted chains, poly(perfluoropropylene oxide), are completely miscible in **carbon dioxide** at moderate pressures. The effect of mol. architecture on polymn. rate and PMMA particle size was evaluated by varying the mol. wt. of the **anchor group** (backbone of the copolymer), mol. wt. of the **CO2**-sol. graft chain, and graft chain d. The efficiency of the graft copolymers as dispersants was demonstrated as micron-size polymer beads of mol. wt. greater than 100,000 were produced. A careful balance between **anchor group** size (backbone length) and amt. of sol. component (either graft chain length or graft chain d.) is necessary but not sufficient to achieve adequate stabilization. The distribution of the sol. component along the **anchor group** is also important. Furthermore, the backbone mol. wt. was shown as the key component for stabilization, provided that enough **CO2** -philic component has been included to ensure soly.

IT **124-38-9**, **Carbon dioxide**, uses
(stabilizer for use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

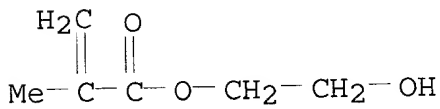


IT **185997-25-5P**, 2-Hydroxyethyl methacrylate-methyl methacrylate-perfluoropropylene oxide graft polymer
(stabilizer; prepn. and use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)

RN 185997-25-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with methyl 2-methyl-2-propenoate and trifluoro(trifluoromethyl)oxirane, graft (9CI) (CA INDEX NAME)

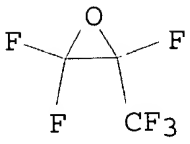
CM 1

CRN 868-77-9
CMF C6 H10 O3



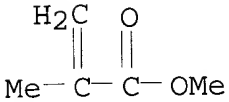
CM 2

CRN 428-59-1
CMF C3 F6 O



CM 3

CRN 80-62-6
CMF C5 H8 O2



CC 35-4 (Chemistry of Synthetic High Polymers)
ST dispersion polymn methyl methacrylate **carbon dioxide**; stabilizer dispersion polymn methyl methacrylate
IT Polymerization
(dispersion; stabilizer for use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)
IT **124-38-9**, **Carbon dioxide**, uses
(stabilizer for use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)
IT 9011-14-7P, Poly(methyl methacrylate)
(stabilizer for use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)
IT **185997-25-5P**, 2-Hydroxyethyl methacrylate-methyl methacrylate-perfluoropropylene oxide graft polymer
(stabilizer; prepn. and use in dispersion polymn. of Me methacrylate in **supercrit. carbon dioxide**)

L42 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1997:21239 HCAPLUS
DOCUMENT NUMBER: 126:53871
TITLE: Cleaning and treating a micromechanical device
INVENTOR(S): Wallace, Robert M.; Douglas, Monte A.
PATENT ASSIGNEE(S): Texas Instruments Incorporated, USA
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 746013	A2	19961204	EP 1996-108733	19960531
EP 746013	A3	19991027		

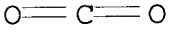
R: DE, FR, GB, IT, NL

PRIORITY APPLN. INFO.: US 1995-455466 19950531

AB A method of cleaning and treating a device, including those of the micromech. and semiconductor types, is described. The surface of a device, such as the landing electrode of a digital micromirror device, is 1st cleaned with a **supercrit.** fluid (**SCF**) in a chamber to remove sol. chem. compds., and then kept in the **SCF** chamber until and during the subsequent passivation step. Passivating agents including perfluorodecanoic acid and **perfluoropolyether** are suitable for the present invention. By keeping the device in the **SCF** chamber, and without exposing the device to, for instance, the ambient of a clean room, org. and inorg. contaminants cannot be deposited on the cleaned surface prior to the passivation step. The present invention derives tech. advantages by providing an improved passivated surface that is suited to extend the useful operation life of devices, including those of the micromech. type, reducing stiction forces between contacting elements such as a mirror and its landing electrode. The present invention is also suitable for cleaning and passivating other surfaces, including those of semiconductor wafers and hard disks.

IT **124-38-9**, **Carbon dioxide**, processes
(cleaning agent for micromech. devices)

RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



IC ICM H01L021-306
ICS G02B026-08

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73

IT **Coating process**
(formation of protective films on micromech. devices)

IT **Polyethers**, processes
(**perfluoro**; passivating agents for micromech. devices)

IT **Fluoropolymers**
(**polyether**-; passivating agents for micromech. devices)

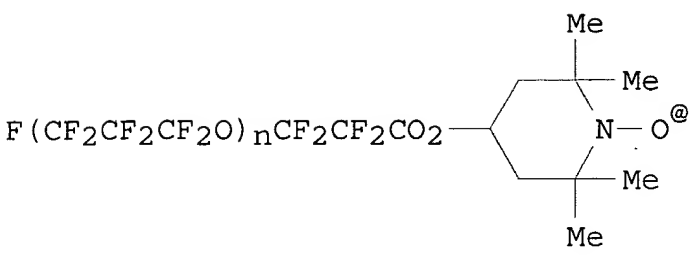
IT **124-38-9**, **Carbon dioxide**, processes
(cleaning agent for micromech. devices)

L42 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1996:462234 HCAPLUS
DOCUMENT NUMBER: 125:114490
TITLE: Preparation of **fluorinated** **polyether** containing organic free radical compound as lubricating oil for magnetic recording medium
INVENTOR(S): Yamana, Masayuki; Honda, Yoshitaka
PATENT ASSIGNEE(S): Daikin Industries, Ltd., Japan
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

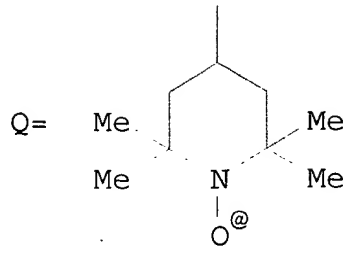
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9611905	A1	19960425	WO 1995-JP2084	19951012
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 786451	A1	19970730	EP 1995-934279	19951012
R: DE, FR, GB, IT				
US 5965496	A	19991012	US 1997-817440	19970523

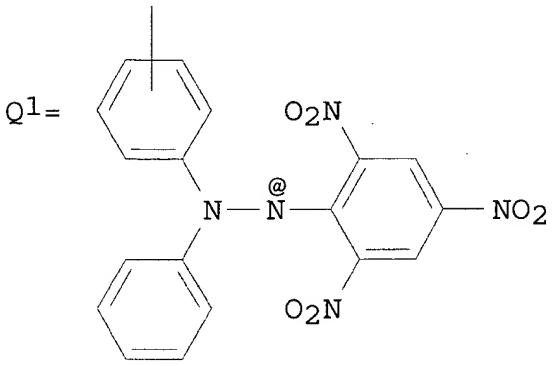
PRIORITY APPLN. INFO.: JP 1994-248148 19941013
WO 1995-JP2084 19951012

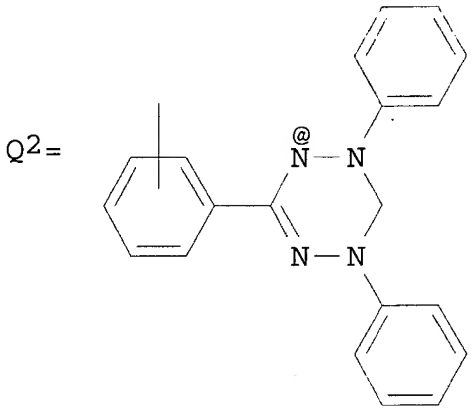
GI



III







AB A **fluorinated polyether** compd. represented by the following general formula X-(Rf1)-(CF2)x-(CH2)y-(CHRCH2)z1-Y1-Z1 (I) or Z2-Y2-(CH2CHR)z2-(CH2)y-(CF2)x-(Rf2)-(CF2)x-(CH2)y-(CHRCH2)z3-Y3-Z3 (II) [Rf1 and Rf2 represent each a **fluorinated polyether** group, **perfluoroalkyl** group or perfluoroalkenyl group; X = H, F, Cl; Y1, Y2, Y3 = O, **CO2**, CONH; x, y = 0-10; z1, z2, z3 = 0,1; R = H, OH; provided that when R = OH, Y1, Y2, and Y3 = O; Z1, Z2 and Z3 represent each a member selected from among groups contg. org. free radicals represented by formulas Tempol (Q), DPPH (3- or 4-Q1), VDZ (3- or 4-Q2)], which firmly adheres in a thin film to the surface of carbon, amorphous carbon, graphite, **ceramic**, or metals and show good lubricating property and excellent durability, is prepd. A lubricating oil for magnetic recording medium contains said lubricating oil I or II as the essential ingredient. Thus, 100 g F(CF2CF2CF2O)nCF2CF2COF (n = av. 25) was dissolved in 200 mL perfluorohexane, treated with 20 g 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxide under stirring, and heated at 60.degree. for 100 h to give the title compd. (III) (96 g). A hard disk having a carbon top layer was immersed in a 0.1 wt.% soln. of III, taken out, and heated at 80.degree. for 1 h to form a lubricating film (20 .ANG.). The disk showed friction coefficiency of .ltoreq.0.5 after 50,000 working cycles in a CSS tester.

IC ICM C07C243-00
ICS C07D211-94; C07D257-02; C10M105-56; C10M107-44; G11B005-71

ICI C10N040-18

CC 27-16 (Heterocyclic Compounds (One Hetero Atom))

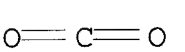
Section cross-reference(s): 74
ST **fluorinated polyether** contg org radical prepn; lubricating oil magnetic recording medium
IT Lubricants
(prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT Fluoropolymers
(prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT Polyethers, preparation
Polyoxyalkylenes, preparation
(fluorine-contg., prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT Recording materials
(magnetic, prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT **Fluoropolymers**
(**polyether**-, prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT Fluoropolymers
(polyoxyalkylene-, prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT 179167-24-9, 2-(4-Hydroxyphenyl)-2-phenyl-1-picrylhydrazine
(fluoroploymer ployoxyalkylenes; prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT 41925-33-1 133921-38-7
(fluoropolymer polyoxyalkylenes; prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT 179167-18-1P 179167-19-2P 179167-20-5P 179167-21-6P
(prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)
IT 2226-96-2, 4-Hydroxy-2,2,6,6-Tetramethyl-1-piperidinyloxy
3225-24-9 14691-88-4 127494-88-6 179167-23-8
(prepn. of **fluorinated polyether** contg. org. free redial compd. as lubricating oil for magnetic recording medium)

L42 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:315718 HCAPLUS
DOCUMENT NUMBER: 122:83131
TITLE: Silica-Treated **Ceramic** Substrates for Formation of Polymer-**Ceramic** Composite Membranes

AUTHOR(S): Moaddeb, Maryam; Koros, William J.
CORPORATE SOURCE: Department of Chemical Engineering, University of Texas, Austin, TX, 78712, USA
SOURCE: Ind. Eng. Chem. Res. (1995), 34(1), 263-74
CODEN: IECRED; ISSN: 0888-5885
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Fabrication of composite membranes from a highly porous substrate and a thin polymeric permselective layer allows achieving both high flux and selectivity in a single structure. In practice, formation of such composites is difficult due to the presence of large pores on the surface of highly permeable substrates. A novel approach to the formation of composite membranes was examd. in this work to avoid this difficulty with large, hard-to-coat pores. Anopore microporous aluminum oxide membranes with 2000 .ANG. pores were used as model systems and were treated with 100 .ANG. spherical colloidal silica particles to reduce their pore diam. while maintaining low flow resistance through them. The silica-treated **ceramics** were then used as substrates for formation of thin defect-free polymer-**ceramic** composite membranes by a soln.-coating method. A polycarbonate, 2 fluoropolymer-polyimides,and a **fluoropolymer-polyether**-polysulfone were used as the polymer coatings. The treatment protocols, characterization of the treated substrates, and gas permeation results for the composites formed are discussed.

IT **124-38-9**, **Carbon dioxide**, properties
(polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)

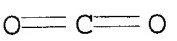


CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 47, 57
ST **ceramic** substrate silica polymer layer membrane; polyether **ceramic** composite membrane; polysulfone **ceramic** composite membrane; polyimide **ceramic** composite membrane; fluoropolymer **ceramic** composite membrane; polycarbonate **ceramic** composite membrane; gas sepn polymer **ceramic** composite membrane; alumina silica polymer composite membrane
IT Polymer morphology
(in polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT **Ceramic** materials and wares
Membranes
(polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated

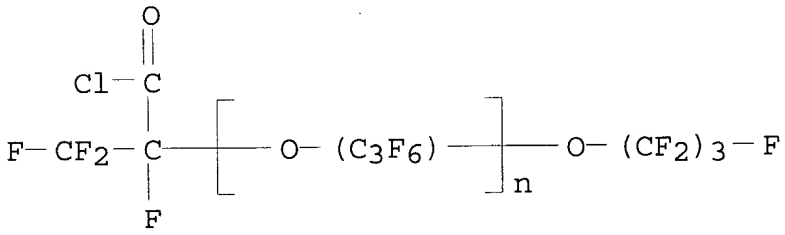
with polymers)
IT Polycarbonates, uses
(polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT Pore
(pore size in polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT Polyimides, uses
(fluorine-contg., polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT Polysulfones, uses
(polyether-, fluorine-contg., polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT **Fluoropolymers**
(**polyether**-polysulfone-, polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT Fluoropolymers
(polyimide-, polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT Polyethers, uses
(polysulfone-, fluorine-contg., polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT 24936-68-3P, Bisphenol A-carbonic acid copolymer, sru, uses
25037-45-0P, Bisphenol A-carbonic acid copolymer 57138-86-0P
57153-28-3P 111343-89-6P 111367-14-7P 140659-80-9P
(polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT **124-38-9**, **Carbon dioxide**, properties
7440-59-7, Helium, properties 7727-37-9, Nitrogen, properties
7782-44-7, Oxygen, properties
(polymer-**ceramic** composite membranes for gas sepn. prepd. from silica-treated **ceramic** substrates coated with polymers)
IT 7631-86-9P, Silica, uses
(silica-treated **ceramic** substrates for formation of polymer-**ceramic** composite membranes for gas sepn.)
IT 1344-28-1P, Anopore, uses
(substrate; silica-treated **ceramic** substrates for formation of polymer-**ceramic** composite membranes for gas sepn.)

L42 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:262021 HCAPLUS
DOCUMENT NUMBER: 123:33744

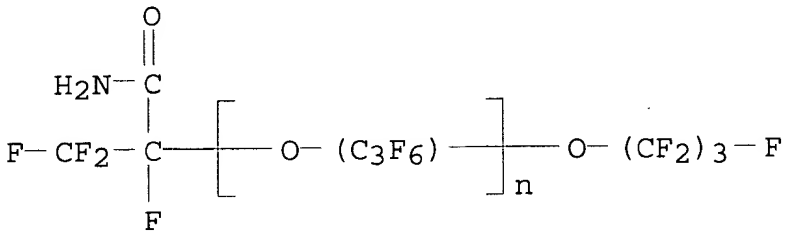
TITLE: Inverse emulsion polymerization of acrylamide in **supercritical carbon dioxide**. [Erratum to document cited in CA120:55125]
AUTHOR(S): Adamsky, F. A.; Beckman, E. J.
CORPORATE SOURCE: Dep. Chem. Eng., Univ. Pittsburgh, Pittsburgh, PA, 15261, USA
SOURCE: Macromolecules (1994), 27(18), 5238
CODEN: MAMOBX; ISSN: 0024-9297
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The errors were not reflected in the abstr. or the index entries.
IT **124-38-9**, **Carbon dioxide**, reactions
(inverse emulsion polymn. of acrylamide in (Erratum))
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



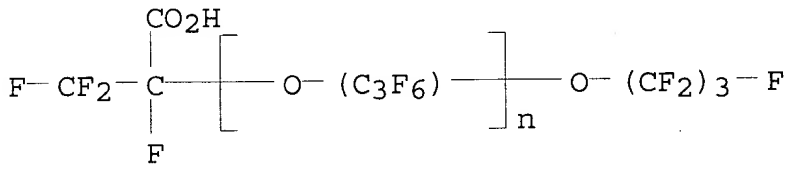
IT **90999-75-0P**
(prepn. and amidation of (Erratum))
RN 90999-75-0 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1-(chlorocarbonyl)-1,2,2,2-tetrafluoroethyl]-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



IT **53789-69-8P**
(prepn. of, for surfactants for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide** (Erratum))
RN 53789-69-8 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1-(aminocarbonyl)-1,2,2,2-tetrafluoroethyl]-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



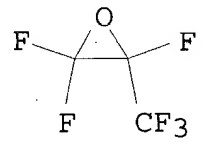
IT **90317-74-1**
(reaction with thionyl chloride of (Erratum))
RN 90317-74-1 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(1-carboxy-1,2,2,2-tetrafluoroethyl)-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



IT **25038-02-2DP**, Hexafluoropropylene oxide homopolymer, **amide group-terminated**
(surfactants, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide** (Erratum))
RN 25038-02-2 HCAPLUS
CN Oxirane, trifluoro(trifluoromethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 428-59-1
CMF C3 F6 O



CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 46
ST erratum inverse emulsion polymn acrylamide surfactant; inverse emulsion polymn acrylamide surfactant erratum; **supercrit carbon dioxide** acrylamide polymn erratum
IT Surfactants

(fluorinated, prepn. of, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide** (Erratum))

IT Polymerization
(inverse emulsion, of acrylamide in **supercrit. carbon dioxide**, fluorinated surfactant for (Erratum))

IT **124-38-9**, **Carbon dioxide**, reactions
(inverse emulsion polymn. of acrylamide in (Erratum))

IT **90999-75-0P**
(prepn. and amidation of (Erratum))

IT **53789-69-8P**
(prepn. of, for surfactants for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide** (Erratum))

IT 9003-05-8P
(prepn. of, in inverse emulsion in **supercrit. carbon dioxide**, fluorinated surfactant for (Erratum))

IT **90317-74-1**
(reaction with thionyl chloride of (Erratum))

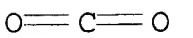
IT **25038-02-2DP**, Hexafluoropropylene oxide homopolymer, **amide group-terminated**
(surfactants, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide** (Erratum))

L42 ANSWER 15 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1994:55125 HCAPLUS
DOCUMENT NUMBER: 120:55125
TITLE: Inverse emulsion polymerization of acrylamide in **supercritical carbon dioxide**
AUTHOR(S): Adamsky, F. A.; Beckman, E. J.
CORPORATE SOURCE: Dep. Chem. Eng., Univ. Pittsburgh, Pittsburgh, PA, 15261, USA
SOURCE: Macromolecules (1994), 27(1), 312-14
CODEN: MAMOBX; ISSN: 0024-9297
DOCUMENT TYPE: Journal
LANGUAGE: English

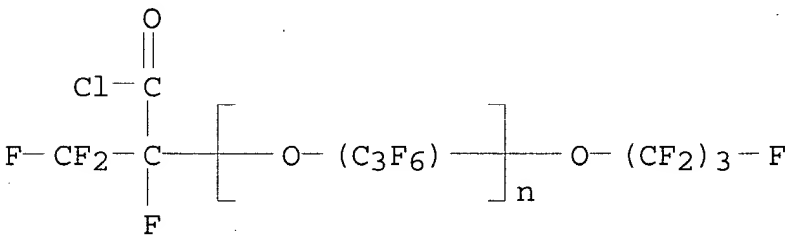
AB Inverse emulsion polymn. of acrylamide was performed using **supercrit. CO2** as the continuous phase to produce ultra-high mol.-wt. linear homopolymer. A new surfactant, highly sol. in **supercrit. CO2**, was synthesized to create the inverse emulsions. Data are presented for both surfactant and homopolymer characterization.

IT **124-38-9**, **Carbon dioxide**, reactions
(inverse emulsion polymn. of acrylamide in)

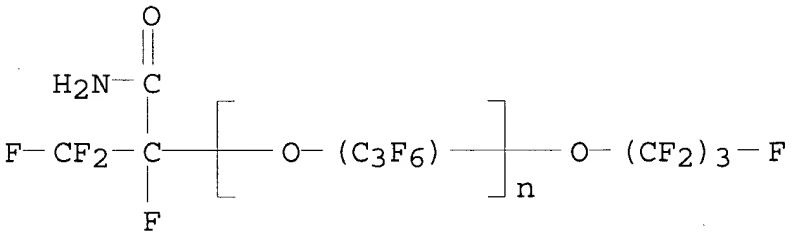
RN 124-38-9 HCAPLUS
CN Carbon dioxide (8CI, 9CI) (CA INDEX NAME)



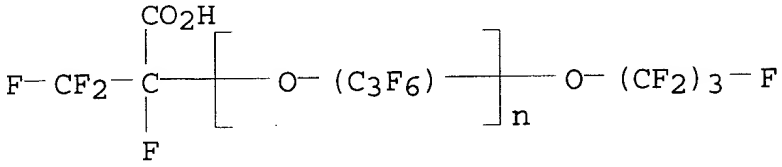
IT **90999-75-0P**
(prepn. and amidation of)
RN 90999-75-0 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1-(chlorocarbonyl)-1,2,2,2-tetrafluoroethyl]-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



IT **53789-69-8P**
(prepn. of, for surfactants for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide**)
RN 53789-69-8 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-[1-(aminocarbonyl)-1,2,2,2-tetrafluoroethyl]-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



IT **90317-74-1**
(reaction with thionyl chloride of)
RN 90317-74-1 HCAPLUS
CN Poly[oxy[trifluoro(trifluoromethyl)-1,2-ethanediyl]], .alpha.-(1-carboxy-1,2,2,2-tetrafluoroethyl)-.omega.-(heptafluoropropoxy)- (9CI) (CA INDEX NAME)



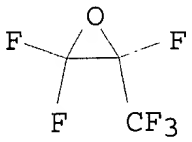
IT **25038-02-2D**, Hexafluoropropylene oxide homopolymer, **amide group-terminated**
(surfactants, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide**)

RN 25038-02-2 HCAPLUS

CN Oxirane, trifluoro(trifluoromethyl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 428-59-1
CMF C3 F6 O



CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 46

ST inverse emulsion polymn acrylamide surfactant; **supercrit carbon dioxide** acrylamide polymn

IT Surfactants
(fluorinated, prepn. of, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide**)

IT Polymerization
(inverse emulsion, of acrylamide in **supercrit. carbon dioxide**, fluorinated surfactant for)

IT **124-38-9**, **Carbon dioxide**, reactions
(inverse emulsion polymn. of acrylamide in)

IT **90999-75-0P**
(prepn. and amidation of)

IT **53789-69-8P**
(prepn. of, for surfactants for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide**)

IT 9003-05-8P, Polyacrylamide
(prepn. of, in inverse emulsion in **supercrit. carbon dioxide**, fluorinated surfactant for)

IT **90317-74-1**

(reaction with thionyl chloride of)
IT **25038-02-2D**, Hexafluoropropylene oxide homopolymer, **amide group-terminated**
(surfactants, for inverse emulsion polymn. of acrylamide in **supercrit. carbon dioxide**)

L42 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1993:562334 HCAPLUS
DOCUMENT NUMBER: 119:162334
TITLE: Reaction products of fluorine-containing oligomers with aminoplasts and compositions containing them for treatment of fibrous substrates
INVENTOR(S): Dams, Rudolf J.; De Witte, Johan E.
PATENT ASSIGNEE(S): Minnesota Mining and Mfg. Co., USA
SOURCE: PCT Int. Appl., 57 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9217517	A1	19921015	WO 1992-US597	19920124
W: BR, CA, JP, KR				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
US 5292796	A	19940308	US 1991-679652	19910402
CA 2105298	AA	19921003	CA 1992-2105298	19920124
EP 578743	A1	19940119	EP 1992-910094	19920124
EP 578743	B1	19980603		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, MC, NL, SE				
JP 06505523	T2	19940623	JP 1992-509317	19920124
BR 9205829	A	19940823	BR 1992-5829	19920124
PRIORITY APPLN. INFO.:			US 1991-679652	19910402
			WO 1992-US597	19920124

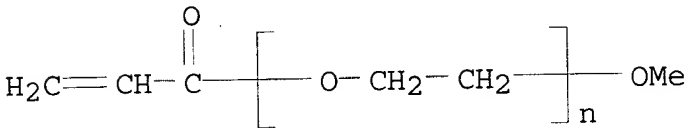
AB Products having aminoplasts linked by O, S, NH, or **CO2** bridges to oligomers having fluoroaliph. groups with fully fluorinated terminal groups are manufd. for use as oil- and waterproofing, stain-releasing, and softening agents for fibrous substrates such as fabrics, paper, and leather. Thus, reaction of hexamethoxymethylmelamine with 2-**mercaptoethanol**-**endcapped** oligomeric poly(N-methylperfluorooctanesulfonamido ethyl acrylate) gave a product (I). Cotton-polyester fabric was treated with an aq. emulsion of I and Et cellulose and cured to give fabric with good oil and water repellency after repeated laundering and dry-cleaning.

IT **39420-94-5DP**, reaction products with mercaptoethanol and aminoplasts
(manuf. of, for finishes for fibrous substrates)
RN 39420-94-5 HCAPLUS
CN 2-Propenoic acid, 2-[[(heptadecafluorooctyl)sulfonyl]methylamino]eth

yl ester, polymer with .alpha.-(1-oxo-2-propenyl)-.omega.-methoxypoly(oxy-1,2-ethanediyl) (9CI) (CA INDEX NAME)

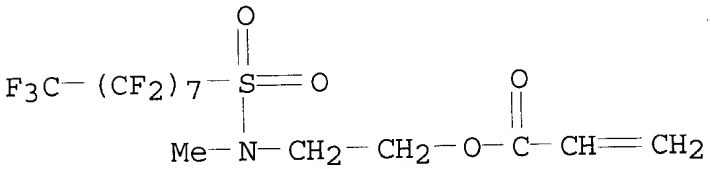
CM 1

CRN 32171-39-4
CMF (C2 H4 O)n C4 H6 O2
CCI PMS



CM 2

CRN 25268-77-3
CMF C14 H10 F17 N O4 S



IC ICM C08G012-40
ICS D06M015-19
CC 40-9 (Textiles and Fibers)
Section cross-reference(s): 37, 43, 45
IT 60-24-2DP, 2-Mercaptoethanol, reaction products with aminoplasts and fluorine-contg. oligomers 68-11-1DP, Mercaptoacetic acid, reaction products with aminoplasts and fluorine-contg. oligomers 79-41-4DP, esters with di-Me siloxanes, reaction products with mercaptoethanol and methylperfluorooctanesulfonamidoethyl acrylate and aminoplasts 1854-26-8DP, Dimethyloldihydroxyethyleneurea, reaction products with mercaptoethanol and fluorooligomers 9003-08-1DP, Formaldehyde-melamine copolymer, reaction products with mercaptoethanol and fluorooligomers 27119-23-9DP, Poly(N-methylperfluorooctanesulfonamidoethyl acrylate), reaction products with mercaptoethanol and aminoplasts **39420-94-5DP**, reaction products with mercaptoethanol and aminoplasts 108388-39-2DP, reaction products with mercaptoethanol and aminoplasts 149545-17-5DP, reaction products with mercaptoethanol and aminoplasts 150179-37-6DP, reaction products with mercaptoethanol and aminoplasts
(manuf. of, for finishes for fibrous substrates)

L42 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1969:413967 HCAPLUS
DOCUMENT NUMBER: 71:13967
TITLE: Perfluorinated rubbery polymers
PATENT ASSIGNEE(S): Minnesota Mining and Manufg. Co.
SOURCE: Fr., 8 pp.
CODEN: FRXXAK
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1524639		19680510	FR	19670526

AB The title polymers, which are resistant to solvents and stable at high temp., are prepd. from perfluorodi-carboxylic acids by pyrolysis of the corresponding Hg salts, and by uv irradn. or heating of the related nitriles in the presence of HCl. Thus, 10 g. of the Hg salt of perfluoro-4-oxaheptanedioic acid was heated 45 min. at 150-200.degree./16 mm. The temp. was then raised to 230.degree. in 10 min. and slowly to 300.degree. in 2 hrs., after which **CO2** evolution became quite slow. The pressure and temp. were then raised to 150 mm. and 350.degree. in the course of 2 hrs., and heating was continued at 345-65.degree. for 2 hrs., while allowing the pressure to rise to atm. The rubbery polymeric product was washed with HNO3, H2O, and Me2CO and agitated with a perfluorinated cyclic ether (FC 75) for 2 days. The resultant mixt. was filtered, and the insol. residue was dried in vacuo at 75.degree. to yield 0.5 g. of grayish elastomer, the ir spectrum of which indicated a structure [O(CF2)4]n **terminated** with **carboxyl groups**. Polymers were similarly prepd. from the Hg salts of perfluoroglutaric acid, a mixt. (I) contg. HO2C[CF(CF3)OCF2]3(CF2)4[CF2OCF(CF3)]3CO2H, HO2C[CF(CF3)OCF2]2(CF2)4[CF2OCF(CF3)]4CO2H, and HO2CCF(CF3)O(CF2)5[CF2OCF(CF3)]5CO2H, and the acid trimer from NC(CF2)3COCl, HO2C(CF2)5O(CF2CF2O)4CF2CO2H, and perfluorobutyric acid. In another example, the dinitrile of a mixt. (II) analogous to I with the formula C58F112O20H2 was heated 8 hrs. at 200-50.degree. in a sealed tube in the presence of anhyd. HCl, after which HCl was removed in vacuo to give a rubbery product, which was insol. in perfluoroheptane (III) and contained triazine units. Irradn. of the dinitrile of II with unfiltered uv light also gave a rubbery solid which was insol. in III and contained polyazine units.

IC C08G
CC 38 (Elastomers, Including Natural Rubber)
IT Rubber, synthetic
(**perfluoropolyether**, manuf. of, from perfluorinated dicarboxylic acids)

=> d l43 1-4 ti

L43 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2001 ACS
TI Laser-Induced Short Time Scale Thermal Chemistry of **Perfluoropolyether** Lubricant Films

L43 ANSWER 2 OF 4 HCAPLUS COPYRIGHT 2001 ACS
TI Reactions of **perfluoropolyether** (PFPE) acids and their corresponding salts.

L43 ANSWER 3 OF 4 HCAPLUS COPYRIGHT 2001 ACS
TI Structures and gas-separation properties of silicone-containing polyimides

L43 ANSWER 4 OF 4 HCAPLUS COPYRIGHT 2001 ACS
TI Studies on silicone-grafted copolyimides. 3. Synthesis of soluble polyimide/poly(dimethylsiloxane) graft copolymer and application to separation membrane

=> d l43 1 ibib abs hitstr hitind

L43 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1999:575453 HCAPLUS
DOCUMENT NUMBER: 131:288574
TITLE: Laser-Induced Short Time Scale Thermal Chemistry of **Perfluoropolyether** Lubricant Films
AUTHOR(S): Heller, J.; Mate, C. M.; Poon, C. C.; Tam, A. C.
CORPORATE SOURCE: FH Muenster, University of Applied Sciences Stegerwaldstrasse 39, Steinfurt, 48565, Germany
SOURCE: Langmuir (1999), 15(23), 8282-8287
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB We investigate the effect of heating a **perfluoropolyether** lubricant film in a localized area for relatively short time periods using laser irradn. vs. conventional oven heating. These expts. help provide understanding on how flash temps. generated at frictional contacts affect the thermal chem. of lubricant films. In these expts., a **CO2** laser heats a 50 .mu.m wide area of a silicon wafer for time periods ranging from 0.1 to 60 s. The surface temp. within the heated area (up to 280 .degree.C in these expts.) is monitored with a second laser by measuring the change in reflectivity near the center of the heated area. A major difference obsd. for laser heating compared to oven heating is that the effective evapn. rate is orders of magnitude higher for laser heating. If the lubricant film is heated for sufficiently long enough time at high temps., we are able to observe thermal bonding of the lubricant via its alc. **end groups** to the

silicon oxide surface, followed by thermal decompn. of the lubricant mols. After laser heating, we are able to observe the diffusion of lubricant back into the localized heated area using a combination of optical microscopy and imaging ellipsometry.

CC 51-8 (Fossil Fuels, Derivatives, and Related Products)

REFERENCE COUNT: 26

REFERENCE(S):

(2) Cornaglia, L; J Vac Sci Technol A 1997, V15, P2755 HCAPLUS

(3) Gao, C; IEEE Trans Magn 1995, V31, P2982 HCAPLUS

(4) Gao, C; J Tribology 1999, V121, P97 HCAPLUS

(5) George, S; Physical Methods of Chemistry 1993, V9A, P453 HCAPLUS

(7) Hall, R; J Phys Chem 1987, V91, P1007 HCAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> d l44 1-5 ti

L44 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2001 ACS
TI Electrophotographic photoreceptors using polycarbonates binder resin, process cartridge containing the photoreceptor, and electrophotographic apparatus

L44 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2001 ACS
TI Gas permeation properties of hyperbranched polyimide membranes

L44 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2001 ACS
TI Degradation of a branched perfluoropolyalkyl ether fluid with anhydrous aluminum chloride

L44 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2001 ACS
TI Electrophotographic photoreceptor using acrylic graft copolymer binder resin

L44 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2001 ACS
TI Manufacture of fluorine-containing **group-terminated** polymers